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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/870,226 | 05/30/2001 | Kenneth L. Smith | 54538USA7C012 | 9179 |
| 32692 | 7590 | 09/07/2006 | EXAMINER | |
| 3M INNOVATIVE PROPERTIES COMPANY | | | LONEY, DONALD J | |
| PO BOX 33427 | | | ART UNIT | |
| ST. PAUL, MN 55133-3427 | | | PAPER NUMBER | |

1772

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,226

Applicant(s)

SMITH ET AL.

Examiner

Donald Loney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-13,15-21 and 35-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-13,15-21,35-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 20, 2006 has been entered.

Allowable Subject Matter

2. The indicated allowability of claim 14 is withdrawn in view of the newly discovered reference(s) to Reeves et al (5234740). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 15-18, 20, 21 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al (5735988) in view of Stamm and either Nilsen (5657162 or 5780140).

Chau et al. disclose a method for making a reflective (i.e. engineered reflective surface), article (column 9, lines 39-48). Chau et al. teach the method comprises providing a base layer, forming a structured surface on the base layer, applying a reflective coating to the structured surface, applying an at least partially transparent, flowable, and radiation curable adhesive (e.g. acrylic based) to the structured surface, placing a substrate over the radiation curable adhesive (see Figures IC-IF and column 5, lines 57-65 and column 6, lines 1-19). Alternatively, Chau et al. teach applying the radiation curable adhesive by first coating the substrate and then, applying the coated substrate to the structured surface (column 6, lines 20-21). Chau et al. are silent as to the structured surface comprising retroreflective cube corner cavities. However, Chau et al. require a reflective surface topography, and Chau et al. specifically teach choosing the surface topography of the structured surface is well within the ordinary skill of one in the art (column 5, lines 14-21 and column 10, lines 1-5).

Stamm discloses a surface topography to produce retroreflective articles having high retroreflective efficiency. Stamm teaches forming a high efficiency retroreflective article by providing a base layer, forming a structured surface comprising cube corner cavities separated on their top surface on the base layer, applying a reflective foil to the

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structured surface, and filling the structured surface with an optically transparent material (see Figure I and the abstract and column 2, lines 3-13 and column 3, lines 35-55 and column 5, lines 8-14 and column 6, lines 38-45).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to Chau et al. to use the cube corner cavity surface topography, as taught by Stamm, for the topography of Chau et al. in order to create a cube corner cavity retroreflective article having high retroreflective efficiency motivated by the fact Chau et al. teaches other topographies can be used to form reflective articles and retroreflective articles are a type of reflective article. Chau et al teaches polycarbonate for the body at column 5, line 4. The applicant discloses polycarbonate for the body on page 15, line 27. Chau et al teaches acrylics for the flowable material at column 6, lines 9-11. The applicant discloses acrylics for the flowable material on page 13, lines 4-20. In the absence of inherency, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the body of a more rigid material since it supplies the integrity and strength to the article. With respect an adhesive layer being on the rear surface Reeves discloses a pressure sensitive adhesive 20 can be applied to the back surface of a retroreflective article 22, therefore it would be obvious to include an adhesive on the back side of the article in order to apply it to its intended surface in this manner. Refer to column 4, lines 1-25 in Reeves. It is noted that claim 14, which was previously indicated as allowable, did not depend from independent claims 15 or 35.

6. Claims 1, 3-13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al in view of Stamm as applied to claims 15-18, 20, 21 and 35-37 above, and further in view of further in view of either one of JP 042096876 or JP 081 57793 and Reeves.

Chau et al. and Stamm as applied above teach all of the limitations in claims 22-25, 28-30, 32, and 35 except for specifically reciting the acrylic based epoxy adhesive (the radiation curable adhesive) is pressure-sensitive. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated that acrylic based epoxy adhesives such as that taught by Chau et al as modified by Stamm are pressure-sensitive as evidenced by either one of JP 04209686 or JP 08157793.

JP 04209686 and JP 08 157793 specifically note acrylic based epoxy adhesives are pressure-sensitive (See the English abstracts). With regards to claims 6-8, Chau et al. and Stamm as applied above teach all of the limitations except for a specific teaching of using a releasable liner as the substrate. However, Chau et al. are not limited to any particular type of substrate, and Chau et al. are not limited to any particular retroreflective article. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the substrate taught by Chau et al. as modified by Stamm a releasable liner as suggested by Rowland as it was conventional in the art to form the retroreflective article on a releasable liner substrate when the retroreflective article is not permanently mounted during its production such that it may be applied later to a final substrate. It would also be obvious to use a heat-activated adhesive as in claim 3 for the same reasons as a pressure sensitive adhesive is used

(i.e. to mount the article). The elastic modulus of claims 10 and 11 would be obvious to one of ordinary skill in the art motivated by the fact that the structure has been shown to be known and similar materials are used in the prior art and one would conform properties of an article to its particular application. With respect an adhesive layer being on the rear surface Reeves discloses a pressure sensitive adhesive 20 can be applied to the back surface of a retroreflective article 22, therefore it would be obvious to include an adhesive on the back side of the article in order to apply it to its intended surface in this manner. Refer to column 4, lines 1-25 in Reeves.

7. Claims 1, 3-13, 15-21 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Rowland (5376431) or Rowland (3810804) in view of Stamm and Reeves.

Both primary references teach a retroreflective article comprising cube corner prisms coated with a reflective layer that has an adhesive there over. Refer to figure 3 in Rowland '804 showing prisms 12, reflective layer 30 and adhesive layer 32. Refer to figure 5 in Rowland '431 showing prisms 12, reflective layer 14 and adhesive layer 20. The primary references differ from the recited invention in that the prisms are considered a positive array (i.e. protrude outwardly) instead of a negative array (i.e. form cavities as recited in the instant claims). This is done so that light that enters through the back side (i.e. side opposite the adhesive or flowable material) is reflected back there through. The applicants invention is in forming the cube corners as cavities in the front side then applying a reflective film and adhesive thereto so that the article can be mounted from the front side and light can pass through the side with the

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adhesive and be reflected. It would appear this would be used to mount to a transparent substrate.

Stamm teaches that an array of cube corner elements can be in either cavity or prism form, then coated reflective material and filled in with a transparent medium in order to form an optical element having high reflective efficiency. Refer to column 2, lines 1-12, column 3, lines 34-65, column 4, lines 12-22, column 5, lines 8-15, column 6, lines 38-47, column 24, lines 1-38 and specifically column 25, lines 12-22 which disclose the alternative of the cavities or prism cube corner elements.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to either primary reference to form the cube corner elements as a cavity, as taught by Stamm, in order for light to be able to pass through the adhesive side of the article when used and be reflected therefrom motivated by the fact that Stamm teaches either prisms or cavities are known cube corner elements. The elastic modulus of claims 10 and 11 would be obvious to one of ordinary skill in the art motivated by the fact that the structure has been shown to be known and similar materials are used in the prior art and one would conform properties of an article to its particular application. Regarding the pressure sensitive adhesive limitation in claim 1, Rowland '431 teaches such at column 5, lines 37-40. Rowland '804 also discloses pressure sensitive adhesives at column 7, lines 68-69. With respect to the modulus limitations in claims 15 and 35 it is the examiners position that these are inherent in the prior art since the same type of materials are disclosed for each layer. Rowland '431 teaches polyester for the body at column 5, line 12. The applicant discloses polyester

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for the body on page 15, line 28. Rowland teaches silicone pressure sensitive adhesive at column 5, lines 37-40. Silicone would have a modulus less than a much harder polycarbonate and/or polyester used for the body. In the absence of inherency, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the body of a more rigid material since it supplies the integrity and strength to the article. With respect an adhesive layer being on the rear surface Reeves discloses a pressure sensitive adhesive 20 can be applied to the back surface of a retroreflective article 22, therefore it would be obvious to include an adhesive on the back side of the article in order to apply it to its intended surface in this manner. Refer to column 4, lines 1-25 in Reeves.

Response to Arguments

8. Applicant's arguments with respect to claims 1,3-13,15-21 and 35-37 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Loney whose telephone number is (571) 272-1493. The examiner can normally be reached on Mon, Tues, Thurs and Fri. 8AM-4PM, flex schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Donald Loney
Primary Examiner
Art Unit 1772

DJL:D.Loney
09/03/06